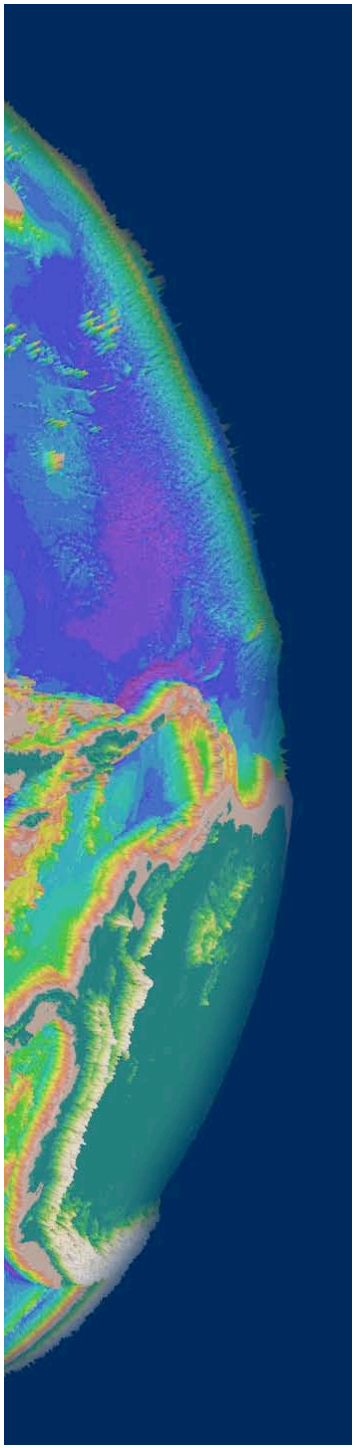

# Vision for 2035: A Solid Earth Science and Natural Hazard Program for NASA

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NASA Earth Science and Applications from
Space Strategic Roadmap Committee
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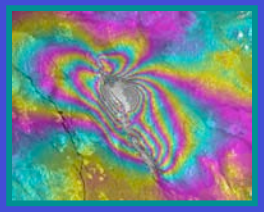
# The Solid Earth Is Integral to the Earth System

- Climate can be influenced by volcanic eruptions.
- Paleoclimate change is recorded in sediments and ice sheets.
- Sea-level is modified by the response of the solid Earth to ocean and ice changes.
- Climate, weather, and the changing land surface interact through floods, landslides, and coastal erosion.
- The effect of space weather is modified by Earth's changing magnetic field.

# Scientific Challenges for Solid Earth Science



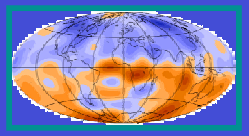
What is the nature of deformation at plate boundaries and what are the implications for earthquake hazards?

How do magmatic systems evolve and under what conditions do volcanoes erupt?

How do tectonics and climate interact to shape the Earth's surface and create natural hazards?

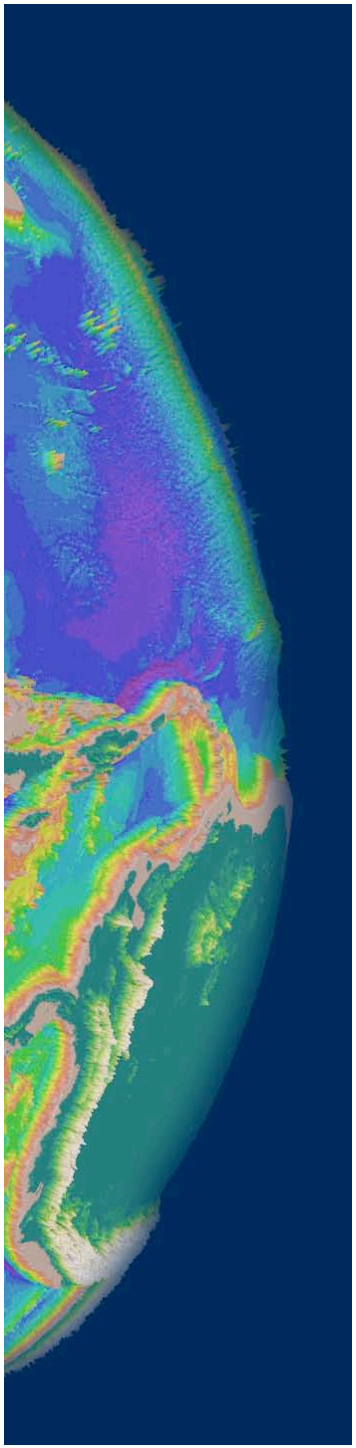
What are the dynamics of the mantle and crust and how does the Earth's surface respond?

What are the interactions among ice masses, oceans, and the solid Earth and their implications for sea level change?



What are the dynamics of the Earth's magnetic field and its interactions with the Earth system?

Source: Living on a Restless Planet, NASA Solid Earth Science Working Group, 2002.



# Missions Recommended by SESWG

- In the next 5 years, the new space mission of highest priority for solid-Earth science is a satellite dedicated to InSAR measurements of the land surface at L-band.

- Over the next 5-10 years, the scientific challenges facing solid-Earth science can best be met by NASA leading or partnering missions involving constellations of satellites dedicated to
  - –InSAR
  - –Global topography and its temporal changes
  - –Magnetic field measurements
  - –Time-variable gravity field
  - –Broad-band imaging spectroscopy